



Average daily sea ice drift recorded from satellite image data, in the period July-September, 1996.

It was the early explorers who first discovered that the sea ice was neither motionless, nor lifeless. To them the ice formed a randomly shifting barrier that blocked their passage southward from the roaring forties to the coast of Antarctica. Equipped with wooden vessels the ice pack threatened a watery grave. Yet, in spite of these dangers, heroic and sometimes reckless quests led them to new scientific discoveries. Shackleton's two-year long adventure on the *Endurance* provides the most astonishing case in point.

The veteran explorer Shackleton, single-minded and ambitious, sailed on board the *Endurance* in 1915 with the aim of reaching Antarctica to launch the first attempt at a coast-to-coast ice cap traverse. His attempt was thwarted when *Endurance* became stuck in sea ice close to the continent in January 1915. Subsequently his ship was swept west then north for hundreds of kilometers, before being abandoned

prior to sinking in November 1915. Shackleton's men were forced to carry their lifeboats to where the ice thinned north of the Antarctic circle before they could launch them. In a heroic attempt to save his crew, Shackleton succeeded in sailing in a lifeboat from Elephant Island to South Georgia in late 1916, to raise a rescue party and too complete the heroic final leg of their expedition. In carrying out one of the greatest feats of adventure ever recorded, by completing a huge circle Shackleton's group had unwittingly traced the existence of the western limb of a massive ocean vortex. The so-called eddy circulation traced out by the drifting ice, is now known as the Weddell gyre. This circulation had had swept them 15 degrees of latitude northwards before releasing them into the open ocean.

Sea ice drifts at a rate largely governed by the effect of the winds and currents and their direction with respect to the shape of the coastline. Synoptic low pressure conditions result

Map of the Shackleton expedition, indicating the locations where *Endurance* became trapped, the ship's icebound drift track, and the location where the ship was abandoned before sinking.

